AMENDMENTS TO THE SPECIFICATION

Please amend paragraph [0003] beginning at page 1, line 19, as follows:

[0003] FIGS. 12A and 12B are illustrations showing the structure of a conventional slim loudspeaker. FIG. 12A is a top plan view of the conventional slim loudspeaker, and FIG. 12B is a front elevational view thereof. In FIGS. 12A and 12B, the slim loudspeaker includes a magnet 901, a plate 902, a yoke 903, a housing 904, a cylinder-shaped coil 905, and a diaphragm 906 shaped like an oval. Located on a center portion of the diaphragm 906 (the portion surrounded ~~surround~~ by the coil 905 affixed to the diaphragm 906) is a dome-shaped portion 911 shaped like a semi-circle in cross section. Furthermore, located at an outer rim of the diaphragm 906 (a portion outside of a dotted line drawn on the diaphragm 906 of FIG. 12A) is an edge portion 912 shaped like a semi-oval in cross section. The edge portion 912 of the diaphragm 906 is supported by the housing 904. Here, the diaphragm 906 is supported so that the coil 905 is inserted in a magnetic gap between the plate 902 and the yoke 903.

Please amend paragraph [0004] beginning at page 2, line 10, as follows:

[0004] In FIGS. 12A and 12B, the coil 905 is shaped like a circle when viewed ~~view~~ from above ~~top~~. Therefore, it is difficult for the driving force of the coil to propagate in the direction of the length of the diaphragm 906 (in the horizontal direction in FIG. 12A). To prevent this difficulty, the coil can be shaped like an oval, as is the diaphragm. With this shape, the rigidity of the diaphragm in the direction of the length thereof can be maintained ~~kept~~. On the other hand, in ~~In~~ order to sufficiently ensure the rigidity of the diaphragm in a direction perpendicular to the direction of the length thereof, ~~on the other hand,~~ the center portion of the diaphragm is strengthened by shaping the center portion ~~shaped~~ like a dome, as illustrated in

FIG. 12B, or ~~typically~~ by using a voice coil bobbin in the conventional slim loudspeakers.

Please amend paragraph [0005] beginning at page 2, line 22, as follows:

[0005] However, such a dome-like portion or a voice coil bobbin required to strengthen the center portion of the diaphragm disadvantageously increases the height at the center portion. Therefore, there is a limit in the conventional structure to slim down the diaphragm. Moreover, particularly in the case of strengthening the diaphragm ~~typically~~ by a voice coil bobbin, a vibrating system of the loudspeaker is increased in mass, thereby decreasing pressure sensitivity.

Please amend paragraph [0012] beginning at page 5, line 10, as follows:

[0012] According to the above, the rib is provided in the direction that includes a component of a direction perpendicular to the longitudinal direction, that is, the second direction. With this, the rigidity of the center portion in the second direction can be improved. Therefore, even if the coil has a shape having different lengths in the longitudinal direction and the horizontal direction when viewed from above ~~top~~, the sound quality can be maintained, and the loudspeaker can be slimmed down.

Please amend paragraph [0018] beginning at page 7, line 7, as follows:

[0018] According to the above, even when the coil has a shape having different lengths in the longitudinal direction and the horizontal direction when viewed from above ~~top~~, the amount of deformation by vibrations at the center portion of the diaphragm can be suppressed. Here, when the coil has the above-described shape, if no rib is provided, the elasticity of the edge portion in the vicinity of the center of the diaphragm is smaller than the elasticity thereof at both

ends in the longitudinal direction. As a result, with vibrations, the amount of deformation of the diaphragm is larger at portions closer to the center portion. Such vibrations are totally different from those observed at the ideal piston motion. By contrast, according to the diaphragm of the third aspect, a rib, for example, is provided on a portion of the edge portion that extends in the first direction and is closer to the center portion of the diaphragm (refer to FIG. 7A, which will be described further below). With this, the elasticity of the edge portion at the portion provided with the rib becomes larger, thereby balancing the elasticity of the edge portion between the vicinity of the center portion of the diaphragm and both ends of the edge portion. As a result, vibrations become similar to those observed at the piston motion, thereby improving the sound quality.

Please amend paragraph [0031] beginning at page 13, line 12, as follows:

[0031] As described above, the diaphragm 104 is affixed with the coil 103. As with the diaphragm 104, the coil 103 is shaped so as to extend along the longitudinal direction in FIG. 1B. Specifically, the coil 103 is shaped in a rectangle when viewed from above ~~top~~. The diaphragm 104 is composed of an outer portion located outside of a ~~an~~ portion affixed with the coil 103 (this outer portion is hereinafter referred to as "edge portion") and an inner portion located inside of the portion affixed with the coil 103 (this inner portion is hereinafter referred to as "center portion"). The edge portion is provided with a convex portion 201 (located at an portion surrounded by dotted lines in FIG. 1B) which has a protruding shape in cross section and surrounds the portion affixed with the coil 103. Furthermore, the center portion is provided with ribs 202 extending along the short-diameter direction of the coil 103. With these ribs, the rigidity at the center of the diaphragm 104 in the short-diameter direction can be improved.

Please amend paragraph [0036] beginning at page 16, line 1, as follows:

[0036] When the diaphragm 104 is vibrated, the rigidity of the diaphragm 104 in the long-diameter direction is maintained ~~kept~~ by the coil 103. The rigidity thereof in the short-diameter direction, on the other hand, would be lower than that in the long-diameter direction if the ribs 202 had not been provided, because the coil 103 is shaped in a rectangle. However, with the ribs 202 being provided in the short-diameter direction, the rigidity of the diaphragm 104 in the short-diameter direction is improved. Consequently, a vibration mode occurring in the short-diameter direction is suppressed, thereby increasing an [[a]] upper limiting frequency.

Please amend paragraph [0037] beginning at page 16, line 11, as follows:

[0037] FIG. 2 illustrates sound frequency characteristics in a case where the ribs 202 are provided and in a case where the ribs 202 ~~those~~ are not provided. As illustrated in FIG. 2, with the ribs 202 being provided, the upper limiting frequency is improved to be 10kHz, which is higher than an [[a]] upper limiting frequency in the case where the ribs 202 are not provided(in that case, approximately 4.5kHz in FIG. 2). As such, with the ribs 202 being provided on the center portion of the diaphragm 104, the rigidity of the center portion in the short-diameter direction can be improved without forming the center portion to be in a dome-like shape or providing a voice coil bobbin to the center portion.

Please amend paragraph [0038] beginning at page 16, line 22, as follows:

[0038] As described above, according to Embodiment 1, the rigidity of the center portion of the diaphragm 104 can be maintained ~~kept~~ by the ribs 202. Therefore, sound reproduction in high frequencies can be ensured. Furthermore, with the use of the ribs 202, the thickness of the

center portion of the diaphragm 104 can be reduced, compared with conventional diaphragms. Therefore, according to Embodiment 1, it is possible to slim down the loudspeaker itself while maintaining the quality of sound.

Please amend paragraph [0039] beginning at page 17, line 5, as follows:

[0039] In Embodiment 1, the diaphragm 104 and the coil 103 are each shaped like a rectangle when viewed from above ~~top~~. In another embodiment, the diaphragm 104 and the coil 103 each can be in a shape, such as a square, with a side in a longitudinal direction being ~~is~~ equal to a side in a horizontal direction, when viewed from above ~~top~~. Even in such a shape of the diaphragm 104, the rigidity can be increased by providing one or more ribs to the center portion. Furthermore, the diaphragm 104 and the coil 103 each can be shaped like an oval. Still further, the diaphragm 104 and the coil 103 are not required to have the same shape.

Please amend paragraph [0040] beginning at page 17, line 15, as follows:

[0040] In Embodiment 1, the rigidity is improved by providing the ribs 202 to the center portion of the diaphragm 104. Alternatively, the rigidity can be improved by increasing the thickness of the diaphragm 104 through, for example, a scheme capable of changing the thickness of the diaphragm in certain areas ~~with places~~ or a scheme of adding a film. FIG. 2 also illustrates sound frequency characteristics in a case where the thickness of the center portion is made twice as thick as the thickness of the other portions (for example, the convex portion 201). As illustrated in FIG. 2, with the thickness of the center portion being doubled, the upper limiting frequency is improved to be 7kHz, compared with a case where the thickness is not changed (which is same as the case where the ribs 202 are not provided; approximately 4.5kHz) As such,

by increasing the thickness of the center portion more than that of the other portions, the sound quality can also be maintained, to some extent. Also, with this structure, the loudspeaker can be slimmed down. In this scheme of increasing the thickness of the center portion, as the thickness is increased more, the rigidity can be improved more. Note that, however, as the thickness is increased more, the weight of the diaphragm is also increased, thereby reducing the sound pressure level.

Please amend paragraph [0042] beginning at page 19, line 2, as follows:

[0042] In Embodiment 1, the diaphragm 104 can be formed integrally with the ribs 202 and other portions, or can be formed separately from <u>the</u> ~~those~~ ribs 202. FIG. 4 is an illustration showing one example of a member including the ribs 202 which is formed separately from the diaphragm 104. A member 204 illustrated in FIG. 4 is affixed to the diaphragm 104 whose center portion is flat in cross section, thereby forming the diaphragm 104 having the ribs 202 on the center portion.

Please amend paragraph [0043] beginning at page 19, line 10, as follows:

[0043] Furthermore, in Embodiment 1, the ribs 202 are provided so as to extend in the short-diameter direction on the diaphragm 104. In modification examples, the direction in which the ribs 202 are provided is not restricted to the above. When the shape of the coil viewed from <u>above</u> ~~top~~ has different sides in longitudinal and horizontal directions, the ribs 202 are provided so as to extend in a direction including a component of the short-diameter direction, thereby improving the rigidity in the short-diameter direction. FIGS. 5A and 5B are illustrations showing the center portion of the diaphragm 104 in modification examples. As illustrated in

FIG. 5A, the ribs 202 can be provided at a predetermined angle (45 degrees, in FIG. 5A) with respect to the short-diameter direction. Alternatively, as illustrated in FIG. 5B, the ribs 202 can be provided so as to form a lattice shape at a predetermined angle with respect to the short-diameter angle.

Please amend paragraph [0062] beginning at page 25, line 22, as follows:

[0062] Still further, in Embodiments 1 and 2, descriptions have been made to the diaphragm according to the present invention are used for a loudspeaker whose two magnets sandwich ~~sandwiches~~ the diaphragm. Alternatively, the diaphragm according to the present invention can be used for another loudspeaker typified by a loudspeaker having a magnetic circuit of another type, such as an outer- or inner-magnet type, or a loudspeaker of a driving type. Still further, a loudspeaker using the diaphragm according to the present invention can be easily slimmed down. Therefore, such a loudspeaker can be effectively used for an electronic device, such as a cellular phone or a PDA.

Please amend paragraph [0066] beginning at page 27, line 1, as follows:

[0066] The antenna 501 receives a modulated electric wave output from the nearest base station. The demodulating section 5021 demodulates the modulated wave supplied from the antenna 501 to a receive signal for supply to the signal switching section 5023. The signal switching section 5023 is a circuit for switching signal processing in accordance with the receive signal. That is, if the receive signal is a call signal, the receive signal is given to the ringing signal generating circuit 503. If the receive signal is a voice signal, the receive signal is given to the loudspeaker 404. If the receive signal is a voice signal representing a message to be

recorded, the receive signal is given ~~give~~ to the message recording section 5024. The message recording section 5024 is implemented typically by a semiconductor memory. When the power is ON, the message is recorded in the message recording section 5024. When the cellular phone is located outside of a service area or the power is OFF, the message is stored in a recording device at the base station. The ringing signal generating circuit 503 generates a ringing signal for supply to the loudspeaker 404.